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ABSTRACT

Three areas of research have supported the conceptual relevance of Reduced Environmental Stimulation (RES) techniques in the management of psychological dependencies. First, preliminary studies through the late 1960's indicated that relatively short periods of RES had a facilitative effect on the type of subject who might be most vulnerable to dependency problems. Second, work with Zuckerman's Sensation Seeking Scale established that RES techniques were not only well tolerated but were positively perceived by subjects low in stimulus-seeking behavior. Third, specific work with cigarette, food and alcohol dependencies showed that the combination of therapeutic role and content messages with relative short periods of RES could produce stable reductions in dependency behavior. (Author)

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REDUCED ENVIRONMENTAL STIMULATION TECHNIQUES AND CONTROL OF PSYCHOLOGICAL DEPENDENCIES

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"Reduced Environmental Stimulation Techniques and Control of Psychological Dependencies"

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Three areas of research have supported the conceptual relevance of Reduced Environmental Stimulation (RES) techniques to the management of psychological dependencies. First, preliminary studies through the late 1960's indicated that relatively short periods of RES had a facilitative effect on the type of subject who might be most vulnerable to dependency problems. Second, work with Zuckerman's Sensation Seeking Scale established that RES techniques were not only well tolerated but were positively perceived by subjects low in stimulus-seeking behavior. Third, specific work with cigarette, food and alcohol dependencies showed that the combination of therapeutic role and content messages with relative short periods of RES could produce stable reductions in dependency behavior.

Background and rationale

The scientific investigation of RES techniques emerged in the middle 1950's as a relatively novel area of human research. Preconceptions identifying the procedure as stressful and disruptive appeared to have some research support (Solomon et al., 1957; Solomon, Kubzansky and Leiderman, 1961, Wexler et al., 1958). The negative set which was later to have a chilling effect on research and publications was further intensified by the McGill groups of equation of sensory deprivation and "brainwashing" (Bexton, Heron, and Scott, 1954; Heron, 1957).

Even during this period of preliminary research a number of investigators reported results in sharp contrast to the concept of the reduced sensory environment as a rigorous and even hazardous procedure. A series of papers by Azima and Associates (Azima and Cramer, 1956a, 1956b, 1957; Azima, Vispo and Azima, 1961) reported positive effects of relatively prolonged reduced stimulation on

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psychiatric inpatients suffering from borderline, obsessive and depressive disorders.

Harris (1959) exposed a group of twelve hospitalized schizophrenics to RES conditions for respectively 1/2 hour and 2 hours on two consecutive days. Ten of the twelve subjects showed improvements in functioning without negative effects. The improvements included reduced anxiety and hallucinations. The remaining subjects reported feelings of distress although the experience was otherwise well tolerated. The substantially beneficial effects of a very short encounter contrasted sharply with the mildly unpleasant effects reported by earlier investigators for their non-clinical subjects.

A series of papers from the Lafayette Clinic in Detroit reported results substantially similar to those obtained by Harris and Azima (Cohen et al., 1956; Luby et al., 1962. A mixed group of normals, neurotics, sociopaths and schizophrenics were exposed to one hour of either reduced or mixed reduced and monotonous stimulation. The normal and neurotic subjects were more anxious and restless, while the sociopathic and schizophrenic subjects were more comfortable. The authors suggested that the need for stimulation characteristic of normals was largely absent in the clinical subjects who found even ordinary environmental demands disruptive and disturbing. Verification of this hypothesis was provided by the relief of psychiatric symptoms induced in normals by the drug Sernyl when the subjects were exposed to RES conditions. Follow-up studies by Lawes (1963) and Luisada (1976) confirmed the effectiveness of RES in controlling psychotic reactions to Sernyl.

During this period also, reports with non-clinical subjects began to corroborate the emphasis on individual subject differences and the influence of setting variables which emerged from studies of clinical subjects. Ruff, Levy and Hunter (1961) found that volunteer status, lack of restraint, and definite time limits greatly reduced negative reports from a population of air force personnel. Vernon et al. (1961) reported mild deficits in perceptual motor

functioning after prolonged periods in an environment greatly reducing the absolute level of stimulation. These normal subjects tolerated the RES procedures with little disruptive anxiety and few regressive phenomena.

A group of studies performed at the VA Hospital, Richmond, Virginia, used reduced stimulation with hospitalized psychiatric patients. Positive responses greatly predominated in the analysis of group results. The first of the Richmond experiments used 30 mixed psychiatric patients who experienced six hours of reduced environmental stimulation. A treatment oriented set was maintained, but no specific instructions or information were given. Symptom Rating Scale results showed that positive changes predominated and were relatively stable in a one-week follow-up, while negative changes were infrequent and dissipated rapidly (Gibby, Adams and Carrera, 1960). Analysis of Rorschach changes using the Cartwright modification of Klopfer's Rorschach Prognostic Rating Scale (RPRS) showed significant increases for most subjects (Cooper, Adams and Gibby, 1962). Interestingly, initial RPRS scores were negatively correlated with positve changes, suggesting that subjects least capable of responding to conventional verbal therapies benefited most.

These pilot studies were followed by two well-controlled experiments using a variety of measures of personality change. The first (Cooper, Adams and Cohen, 1965) compared 20 mixed psychiatric patients who experienced three hours of RES with one equated test-retest group. Both groups showed some improvement in reduced symptoms, but the improvement in the experimental group was significantly greater. Positive changes for the experimental group only included increased ego strength, greater self-acceptance, and more adaptive use of internal defenses.

The next Richmond study differed in that therapeutic messages were introduced into the RES setting (Gibby and Adams, 1961). As predicted, the combination of a therapeutic message and reduced stimulus environment was far more effective in producing positive

changes than message only, reduced stimulus environment only, or a test-retest experience. A follow-up study (Hogan, 1963) used essentially the same design and two measures of decision-making ability. Again the improvements were significantly greater in the experimental group (message + RES) than in the 3 control groups.

A final study in this series used individually prepared therapeutic messages combined with three hours of RES. Control groups were RES only and test-retest. The test-retest group showed no significant change. The RES only group was more comfortable and self-accepting, while the RES plus message group showed not only decreased symptoms and improved controls but also increased self-awareness and more realistic ideals (Adams, Robertson and Cooper, 1964, 1966).

An extremely important study by Brownfield (1966) provides a consistent theoretical framework for the understanding of differential responses to reduced environmental stimulation. Using Zuckerman's Sensation Seeking Scale, Brownfield first established that normals score characteristically much higher in stimulus seeking behavior than most clinical groups. Second, when high and low stimulus seeking groups were placed in a RES setting, stimulus seekers reported mild discomfort, anxiety and boredom, while the stimulus avoiders reported feeling comfortable, relaxed and less anxious. The concept of optimum stimulation provided a framework in which the personality types consistently reported as positive and negative changers could be quickly identified on a single bimodal scale. A second theoretical dimension, that of defensive organization, appeared to interact with sensation seeking to produce highly predictable responses. High sensation seeking subjects with either rigid or fragmented perceptual defenses responded most negatively to reduced stimulus environments. Low sensation seekers with open or flexible defense systems responded most positively. Medium sensation seekers with flexible defense systems showed mixed responses with positive changes being quite stable and mildly negative changes dissipating rapidly.

By the early 1970's the parameters for successful treatment application were reasonably well defined:

1. Subjects low in stimulus seeking-behavior tended to respond most positively--this included personality disordered individuals with a variety of behavior problems.

2. The most useful modality involved a reduction of environmental stimulation rather than isolation or perceptual deprivation.

3. Long periods of RES required careful attention to individual differences for success, while brief periods could be used safely to enhance the impact of therapeutic messages or encounters.

Investigations of smoking dependency

The understanding of interactions of set, individual differences and modality made possible the use of reduced stimulus environments and therapeutic messages as a safe and highly effective treatment modality. Paradoxically, many experimenters and journal editors chose to regard the area of "sensory deprivation" as both passe and mildly suspect when applied to human subjects at a time when fifteen years of research had established it as a highly promising addition to the therapeutic armentarium. By the early 1970's the number of clinical publications had diminished and many researchers had left the field. One significant exception was the series of investigations of restricted environmental stimulation therapy (REST) and reduction of cigarette dependency carried on by Suedfeld and associates.

The work by Suedfeld and associates has been based on the use of reduced stimulation to increase the perceptual saliency of messages introduced during the procedure. Individual differences in cognitive style have been related to both compliance and internalization as responses to directive messages (Suedfeld and Vernon, 1966). Once the effectiveness of the approach was confirmed, follow-up studies established the effectiveness of REST and anti-smoking messages in controlling cigarette consumption. A well

controlled study replicated earlier findings at an improved level of effectiveness (Suedfeld et al., 1972). The results were a 38% reduction in the experimental group, which was significantly greater than the 23% reduction for the message alone. A slight increase in smoking was reported by the untreated control group.

After some adjustments in procedure Suedfeld and Ikard (1974) divided non-clinical subjects into four groups which received, respectively, (1) 24 hours of reduced stimulation with anti-smoking messages every 1½ hours, (2) 24 hours of reduced stimulation only, (3) messages alone, and (4) no treatment. The effects of the reduced stimulation alone and with message were highly significant and remained so over a 12 month period. Interestingly, REST only was initially more effective than REST plus message, although the effects had equalized by the end of the first year. The two year follow-up study indicated continuing significant reductions for both the REST plus message (57.8%) and REST only groups (52.5%). Messages only (23.6%) and control (13.6%) showed no significant effects. This study not only emphasized the effectiveness of the combined procedure but the power of an implicit anti-smoking set plus REST without explicit message.

A well-conceived follow-up study examined the effects of both saturation and REST with five smokers. Each individual was also carefully studied for both positive and negative side effects. The procedure was well tolerated with potential stressful aspects of abstinence and the saturation procedures counteracted by the impact of successful mastery of a difficult task. All five succeeded in abstinence initially, and four maintained their abstinence for two years (Suedfeld et al., 1977).

The experiments by Suedfeld and associates establish a number of important points: (1) the REST procedures are largely free of negative side effects; (2) the combination of REST and specific anti-substance abuse messages produces a combined procedure far more effective than its individual components; (3) initial response is very strong and maintained over considerable periods of time--80% response for a minimum of two years in the most effective variant.

Investigation of obesity

The successful smoking reduction experiments have been followed by exploration of other dependencies. Borrie and Suedfeld (1980) used REST as a catalyst to enhance the impact of Stuart's behavioral self-control methods (Stuart, 1967, 1971). The subjects involved were 39 female volunteers between the ages of 21 to 57 who were divided into four treatment groups. The researchers utilized a 2 x 2 factorial design for two independent variables--(1) REST (24 hours) versus nonconfinement, and (2) presentation versus non-presentation of therapeutic messages. The subjects in all four groups were given standardized program instructions and follow-up interviews over a 6 month period. The findings indicated that the combination of 24 hours of REST and therapeutic messages was most effective in producing a significant and continuing weight reduction during the 6 month follow-up sessions, while the other three strategies produced short-level effects. This study differs from most of the literature in the absence of a no-treatment control group. It is congruent with the related literature in reporting a strong catalytic effect of REST which served to extend and stabilize the effect of other treatments.

Investigations of alcohol dependencies

Extensions into other substance abuse problems have focused on alcohol and PCP psychosis. The latter is covered in the differential effects paper. This paper will concentrate on work with heavy social drinkers and alcoholics. A preliminary study by Cooper et al. (1975) focused on the use of reduced environmental stimulation (RES) plus confrontatory role playing as a method of disconfirming self-directed hypotheses which were seen as organizing a wide range of negative behaviors. This study served as a continuation of the VAH Richmond work at VAC Martinsburg, West Virginia.

Subjects were 20 VA domiciliary members whose interpersonal tactics were part of a chronic characterological posture of learned helplessness. Subjects were divided into equated experimental and control groups. All showed consistently self-effacing and covertly

resentful behavior and had a history of hypochondriacal complaints, problem drinking, poor work history, and inadequate social relationships. The basic strategy involved the use of a dominant-warm therapist role to disconfirm subjects' hypothesis of hostility in the other, followed by a submissive-warm therapist role to disconfirm the hypothesis of dominance in the other. The sequence of partial disconfirmation was designed to reduce anxiety and resistance and result in a final role posture in which the subjects were playing a dominant-warm role quite opposite to their characteristic passive-hostile one. To facilitate the impact of the hypothesis disconfirmation and encourage stabilization of new hypotheses, the interpersonal encounters were combined with use of a reduced environmental stimulation setting. The RES setting not only maximized the signal to noise ratio of the hypothesis disconfirming data but also allowed a full hour for consolidation of the new data before the subject had the opportunity to confront and manipulate the therapist.

Control subjects were given a conventional status interview for 30 minutes. Each of the experimental subjects was allowed to play his usual social role for 5 minutes of a 20 minute interview. After this time, the experimenter began to play a role of dominant warmth which was maintained for 15 minutes. Subjects were then placed in RES setting. After 2 1/2 hours in the reduced stimulus environment each subject was removed by the experimenter, who returned him to the interview room for the post-RES interview. During this interview, the experimenter initially assumed the role of active warmth, shifting to a role of passive warmth during the final 15 minutes.

All subjects' clinic visits for 30 days pre- and post-treatment were tabulated. Domiciliary and medical clinic personnel also rated subjects' social adaptiveness, work assignments, alcohol related offenses, and use of hypochondriacal complaints. In addition, experimental subjects' roles during the initial 5 minutes and final 15 minutes of the procedure were compared. The

experimental group showed a reduction from 49 to 9 ($p<.01$) clinic visits; the control group increased from 50 to 53. Experimental group role playing shifted for 17 of 20 possible changes in the predicted direction of active warmth ($p<.01$). The therapeutic changes were largely intact after 6 months. No significant changes occurred in the control group. The finding that alcohol abuse was reduced as well as a number of other target behaviors in experimental subjects suggested that control of alcohol consumption might be achieved with RES combined with both facilitative roles and a specific anti-alcohol abuse message.

A recent experiment by the University of British Columbia group countered criticisms emphasizing the supposed stress of REST procedures and provided additional incentives for applications of REST to alcoholics (Rank and Suedfeld, 1978). Subjects were male alcoholics in remission who participated in a 24-hour RES experience. All completed the procedures without difficulty and rated the reduced stimulus environment as significantly more positive than their usual life environments.

The VAC Martinsburg experiments were continued by the senior author at George Mason University. The new study combined congruent role playing and anti-alcohol messages with RES. Moderate to heavy social drinkers and prodromal alcoholics were involved as subjects. A partial replication design was used. In the pilot study sixty moderate to heavy social drinkers were randomly assigned to one of six groups. The two experimental groups heard either a convergent (E1) or a reciprocal (E2) role plus anti-alcohol message after 1 1/2 hours of a 2 1/2 hour experience of RES. Four control groups received the reciprocal anti-alcohol role plus message (C1), convergent anti-alcohol role plus message (C2), the 2 1/2 hours period of reduced sensory input (C3) and a test-retest situation in which subjects filled out alcohol use questionnaires (C4). Each subject was asked to monitor alcohol use for a week prior to and a week following the experimental or control procedure. A significant reduction in alcohol consumption was predicted for E1 and E2. And it was also

predicted that the convergent (E1) encounter would produce larger shifts than the reciprocal (E2).

Results indicated that the reduction in alcohol intake for the combination of anti-alcohol message and reduced sensory environment differed significantly from the control group at the .01 level. The mean alcohol consumption for each subject was 10.96 oz. of 100% alcohol per week. Mean changes per subject after the procedure for each group were as follows: E1 -3.25 oz., E2 -2.15 oz., C1 -.10 oz., C2 -.82 oz., C3 +.10 oz., and C4 -.8 oz. No control group changes were significant. Self-ideal discrepancies were assessed for all groups and showed no signification changes. Identification with the experimenter-therapist also showed no changes; however, for the RES plus anti-drinking messages groups, a convergence between experimenter and ideal-self ratings indicated that the experimenter as well as the message had been rendered effective as an agent of therapeutic change (Cooper et al., 1977).

The second part of the George Mason University study used 51 male and female subjects between 18 to 31 years of age whose alcohol consumption fell within the heavy social drinker to prodromal alcoholic range. The most effective of the two stimulus messages was slightly modified and recorded by two experimenters who were trained to play a managerial role congruent with the message's content. Subjects were divided into four groups. The experimental group (E1) was taught to monitor their drinking for two weeks, then took the Alcohol Use Inventory and Interpersonal Checklist. Each subject was then exposed to 2 1/2 hours of reduced environmental stimulation (RES). The 5 minute typed anti-alcohol abuse message was introduced after 1 1/2 hours of RES with a final hour for consolidation. Immediately after the experimental procedures Ss were given a repeat of the Interpersonal Checklist and then asked to monitor their drinking for an additional two weeks. At 3 and 6 month intervals Ss were mailed an Alcohol Use checklist for 2 weeks' monitoring and asked to return the results to the experimenters. Control Group 1 underwent the same procedure but experienced RES

without the message. C2 underwent the same procedure but heard the typed message without RES. C3 was a test-retest group.

Analysis of the 2 week and 3 month follow-up data has been completed. For the 2 week follow-up period, experimental Ss reduced their alcohol consumption 55%, significant at the .01 level. The RES-only control group reported a non-significant 4% decrease, and the message-only control group, a non-significant 5.6% reduction. No change in consumption occurred in the test-retest group. After 3 months the changes were as follows: experimental group -62%, RES-only group -46.2%, message-only group -23.6%, and test-retest group +19%. The reduction in the experimental group was significant at the .01 level; the reduction in the RES-only group was significant at the .05 level. The other changes were not significant.

These findings are congruent with reported results of earlier studies. Again the combination of RES and anti-substance abuse message produced significant initial effects which were highly stable. The RES procedure alone apparently produced a smaller delayed effect consistent with the concern for controlling drinking induced in all subjects by the experimental rationale. Although the 6 month results have not been completely tabulated, those received to date indicate a 66% reduction in alcohol consumption in experimental subjects. This suggests that the effects of the combined procedure have been continued for at least 6 months.

In sum, continued investigation of RES techniques has established that receptivity and acceptance of messages introduced into an RES experience were greatly enhanced. Persons afflicted with psychological dependencies appeared to be highly suitable candidates for techniques combining RES and anti-substance abuse messages. Research has been done with dependency problems involving alcohol and other drugs, tobacco and overeating. The findings on response of heavy smokers to the procedures are unusually well documented. Reductions of 30% to 80% have been reported, using both single and multiple exposure designs. These reductions have been

replicated through a variety of cross-validation studies. Stability of effects has been quite impressive with significant reductions being retained after two years. The subjective response to the procedure has also been encouraging. Ss report few or no negative effects and spontaneous terminations are rarely encountered. Application of similar techniques to the control of obesity due to excessive food intake are more recent and less well documented. The initial results are encouraging and suggest the RES plus anti-abuse message might serve as either an adjunct or alternative to conventional behavior modificatior approaches.

Success with these dependency problems has encouraged extensions to alcohol or mixed drug dependencies with the greatest effort being made in the area of alcoholism control. Since this research is relatively recent, firm conclusions cannot be drawn. The studies to date report significant reductions with both alcoholics and moderate to heavy social drinkers. Reductions of 66% have been found, as well as overall behavioral and attitudinal improvement. Positive effects have persisted at least 6 months.

The combination of RES and anti-abuse messages has been effective in controlling several types of psychological dependencies. The best procedures combine rapid control of behavior with positive attitudinal changes and highly stable effects. Negative effects are short-lived and infrequent. Existing research supports continued investigations and increased clinical trials.

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